

The imaging unit 5008 contains the same optical components as the hand-held scanner, including the near-infrared illumination LEDs 2414. In addition, it incorporates a 30-60-90 prism 5012 which folds the imaging cone (to line it up with the image sensor mounted almost normally to the surface 5014) and increases the viewing distance. Since the thimble is less susceptible to ambient light than the hand-held scanner, the near-infrared filter 2104 is optional.

The imaging unit also incorporates the trigger switch (not shown) which registers contact with a tagged surface. Alternatively or additionally, the trigger switch may be placed between thumb and forefinger for manual activation.

The imaging unit incorporates both the image sensor 2412 and the image processor 2410, which are usefully combined into a single compact chip ~~as described in the co-pending US application USSN-
entitled "Image Sensor with Digital Framestore" (docket no. NPS047-US-NPS054) filed 17-
February 2004.~~

The imaging unit 5008 is connected to the processing unit 5006 via a power and high-speed data cable 5010. The remainder of the scanner electronics are incorporated in the processing unit, including the processor 2400 and communications interface 2424. The processing unit is connected to an external control unit via a power and data cable 2504 in the usual way.

Both the imaging unit 5008 and the processing unit 5006 are attached to a harness 5004, constructed from elastic material, which is worn like a glove.

8.4.2.1 FIXED HYPERLABEL LASER SCANNER

A first example of a design of a fixed Hyperlabel laser scanner 254 will now be described.

Figure 76 shows the central unit 1501 of a preferred embodiment of a fixed Hyperlabel laser scanner 1500 suitable for incorporation in a retail checkout 1000.

To accommodate as large a proportion as possible of the full range of product items which may need to be scanned, the Hyperlabel scanner 1500 is designed to accurately scan any item which fits on the 500mm wide conveyor 1014 of the checkout 1000. It is configured to automatically scan a single item at a time as it passes by on the conveyor at a speed of up to 500mm/s. It may scan three sides and the tops of items from both sides of the conveyor, up to an item height of 500mm, thus providing a five-sided scanning function.

The scanner is typically able to scan product items ranging across the full size range, e.g. ranging from packets of corn flakes to packets of chewing gum, as well as partially labelled items such as glass bottles, jars and shrink-wrapped produce.

If the scanner acquires two different item IDs simultaneously then it flags an error to the operator and stops the conveyor, thereby preventing accidental or deliberate (and therefore fraudulent) occlusion of an